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CLAIMS

1. A method for producing a hydrorefining catalyst containing molybdenum, phosphorus, and cobalt or nickel by bringing a carrying solution into contact with a carrier composed of an inorganic porous oxide, the method comprising the steps of:

preparing the carrying solution containing molybdenum, phosphorus, and cobalt or nickel, and

bringing the carrier into contact with the carrying solution, wherein:

a molar ratio of molybdenum with respect to phosphorus in the carrying solution is 2.5 to 7.0, a molar ratio of a total of molybdenum, cobalt, and nickel with respect to phosphorus is 3.5 to 9.0, and a molar ratio of molybdenum with respect to a total of cobalt and nickel is 1.9 to 2.8;

pH of the carrying solution is 2 to 5; and

a Raman spectroscopy spectrum of the carrying solution has a peak top between 965 cm^{-1} and 975 cm^{-1} .

2. The method for producing the hydrorefining catalyst according to claim 1, further comprising a step of calcinating the carrier in an oxidizing atmosphere after the step of bringing the carrier into contact with the carrying solution.

3. The method for producing the hydrorefining catalyst according to claim 1, wherein the Raman spectroscopy spectrum of the carrying solution has a peak top between 935 cm^{-1} and 945 cm^{-1} , and the peak top between 965 cm^{-1} and 975 cm^{-1} is higher than the peak top between 935 cm^{-1} and 945 cm^{-1} .

4. The method for producing the hydrorefining catalyst according to claim 1, wherein the Raman spectroscopy spectrum of the carrying solution has a peak top between 1040 cm^{-1} and 1050 cm^{-1} which is lower than the peak top between 965 cm^{-1} and 975 cm^{-1} , or the Raman spectroscopy spectrum of the carrying solution has no peak top between 1040 cm^{-1} and 1050 cm^{-1} .

5. The method for producing the hydrorefining catalyst according to claim 1, wherein the molar ratio of molybdenum with respect to phosphorus in the carrying solution is 4.1 to 6.5, the molar ratio of the total of molybdenum, cobalt, and nickel with respect to phosphorus is 5.0 to 9.0, and pH of the carrying solution is 3 to 5.